AMENDMENTS TO THE CLAIMS

Please amend Claim 13 as follows:

1. (Previously Presented): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein said block significance determining means calculates for each block a block feature that indicates picture quality other than a variance of each block.

2. (Previously Presented): A moving picture encoding apparatus in accordance with claim 1, wherein

the block significance determining means:

compares the block feature with one or more threshold values and thereby generating block significance for each block.

3. (Canceled).

4. (Previously Presented): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein the block significance determining means calculates for each block a block feature which is a quantity indicating power of a signal obtained by passing intra-block signals through a band-pass filter; and compares the block feature with one or more threshold values and thereby generating block significance for each block.

5. (Withdrawn): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to block information and predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for generating the block information indicating power of an error between frames and a quantity of motion generated during a block encoding operation and sending the block information to the block significance determining means, for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting, and for executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein said block significance determining means calculates for each block a block feature that indicates picture quality other than a variance of each block.

6. (Withdrawn): A moving picture encoding apparatus in accordance with claim 5, wherein the block significance determining means:

compares the block feature with one or more threshold values and thereby generating first block significance for each block;

calculates for each block, according to the block information, a quantity of visual deterioration representing a degree of visual picture deterioration when a forecast error signal is lost;

compares the quantity of visual deterioration with one or more threshold values and thereby generating second block significance for each block; and

combines the first block significance with the second block significance and supplying resultant block significance to the map generating means.

7. (Withdrawn): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein the block significance determining means:

calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block;

compares the block feature with one or more threshold values and thereby generating first block significance for each block;

calculates for each block a quantity of visual deterioration representing a quantity of power of an error between a block in the input image signal and a block in a reference frame, the blocks being respectively at the same position;

compares the quantity of visual deterioration with one or more threshold values and thereby generating second block significance for each block; and

combines the first block significance with the second block significance and supplying resultant block significance to the map generating means.

8. (Withdrawn): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein the block significance determining means:

calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block;

compares the block feature with one or more threshold values and thereby generating first block significance for each block;

calculates for each block a quantity of visual deterioration representing a quantity of power of an error between a block in the input image signal and a block in a reference frame obtained by inter-frame forecast processing, the blocks being respectively at the same position;

compares the quantity of visual deterioration with one or more threshold values and thereby generating second block significance for each block; and

combines the first block significance with the second block significance and supplying resultant block significance to the map generating means.

9. (Withdrawn): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an

intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein the block significance determining means:

calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block;

compares the block feature with one or more threshold values and thereby generating first block significance for each block;

calculates for each block a quantity of visual deterioration representing a quantity obtained by weighting, according to a quantity of motion of a block, power of an error between a block in the input image signal and a block in a reference frame, the blocks being respectively at the same position;

compares the quantity of visual deterioration with one or more threshold values and thereby generating second block significance for each block; and

combines the first block significance with the second block significance and supplying resultant block significance to the map generating means.

10. (Withdrawn): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein the block significance determining means:

calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block;

compares the block feature with one or more threshold values and thereby generating first block significance for each block;

calculates for each block a quantity of visual deterioration representing a quantity obtained by weighting, according to a quantity of motion of a block, power of an error between a block in the input image signal and a block in a reference frame obtained by inter-frame forecast processing, the blocks being respectively at the same position;

compares the quantity of visual deterioration with one or more threshold values and thereby generating second block significance for each block; and

combines the first block significance with the second block significance and supplying resultant block significance to the map generating means.

11. (Withdrawn): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein the block significance determining means:

refers to information of a change in luminance of intra-block signals and a luminance level, thereby generating sensitivity information for the information according

visual characteristics of a human, and calculating the sensitivity information as a quantity of a block feature;

compares the block feature with one or more threshold values and thereby generating first block significance for each block;

compares for each block, according to the block information, a quantity of visual deterioration representing a degree of visual picture deterioration when a forecast error signal is lost;

compares the quantity of visual deterioration with one or more threshold values and thereby generates second block significance for each block; and

combines the first block significance with the second block significance and supplies resultant block significance to the map generating means.

12. (Previously Presented): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

refresh history determining means for temporarily keeping therein the refresh map signal from the map generating means, referring to history of the refresh map signal and a

refresh signal, modifying a value of forced refresh priority indicated by the refresh map signal, and thereby generating a modified refresh map signal;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating the refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein the refresh history determining means includes a map history memory that refers to the refresh map signal from the map generating means and the refresh signal from the adaptive refresh signal generating means, thereby updating history, beginning at a start of encoding processing, of a refresh map, and storing therein the refresh map.

13. (Currently Amended): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

map generating means for generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

refresh history determining means for temporarily keeping therein the refresh map signal from the map generating means, referring to history of the refresh map signal and a refresh signal, modifying a value of forced refresh priority indicated by the refresh map signal, and thereby generating a modified refresh map signal;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating the refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein the refresh history determining means includes a map history memory that refers to the refresh map signal from the map generating means and the refresh signal from the adaptive refresh signal generating means, thereby updating history, beginning at a start of encoding processing, of a refresh map, and storing therein the refresh map ~~in accordance with claim 12~~, wherein the refresh history determining means includes:

a refresh signal history memory for storing therein history of the refresh signal; and

a map modifying section for referring to the map history stored in the map history memory and the refresh history stored in the refresh signal history memory and thereby modifying forced refresh priority indicated by the refresh map signal from the map generating means.

14. (Previously Presented): A moving picture encoding method for encoding successive input image signals, comprising:

determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

generating, according to the block significance, a refresh map signal representing priority of refresh processing for each block;

referring to refresh priority indicated by the refresh map signal and an allowed number of blocks for refresh processing in a frame to be encoded, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein said block significance determining step calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block.

15. (Previously Presented): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

adaptive refresh generating means for referring to refresh priority indicated by the block significance, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an intra-frame forecast encoding operation for a block not specified by the refresh signal,

wherein said block significance determining means calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block.

16. (Previously Presented): A moving picture encoding method for encoding successive input image signals, comprising:

determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

referring to refresh priority indicated by the block significance, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein said block significance determining step calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block.

17. (Previously Presented): A moving picture encoding apparatus for encoding successive input image signals, comprising:

block significance determining means for determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

refresh signal generating means for generating, according to the block significance, a refresh signal representing priority of refresh processing for each block;

adaptive refresh signal generating means for referring to refresh priority indicated by the refresh signal, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

moving picture encoding means for conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein said block significance determining means calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block.

18. (Previously Presented): A moving picture encoding method for encoding successive input image signals, comprising:

determining block significance for each block as an encoding unit of the input image signals according to predetermined evaluation indices;

generating, according to the block significance, a refresh signal representing priority of refresh processing for each block;

referring to refresh priority indicated by the refresh signal, selecting a block for refresh processing, and generating a refresh signal specifying the block for refresh processing; and

conducting an intra-frame encoding operation for a block specified by the refresh signal and for appropriately selecting and executing an intra-frame encoding operation or an inter-frame forecast encoding operation for a block not specified by the refresh signal,

wherein said block significance determining step calculates for each block a block feature which is a quantity that indicates picture quality other than a variance of each block.

19. (Previously Presented): The moving picture encoding apparatus of claim 1, wherein said block feature comprises a distance between a maximum value and a minimum value of luminance signals in each block.

20. (Previously Presented): The moving picture encoding apparatus of claim 1, wherein said block feature comprises a distance between a maximum value and a minimum value of color signals in each block.

21. (Previously Presented): The moving picture encoding apparatus of claim 1, wherein said block feature comprises a difference between power of a luminance signal of each block and power of a luminance signal of an adjacent block.

22. (Previously Presented): The moving picture encoding apparatus of claim 1, wherein said block feature comprises a difference between power of a color difference signal of each block and power of a color difference signal of an adjacent block.

23. (Previously Presented): The moving picture encoding apparatus of claim 1, wherein said block feature comprises a weighted sum of coefficient signals, after a frequency conversion, according to a visual model.

24. (Previously Presented): The moving picture encoding apparatus of claim 1, wherein said block feature comprises an absolute value of a color difference signal.

25. (Previously Presented): The moving picture encoding apparatus of claim 1, wherein said block feature comprises a weighted sum of a variation in luminance signal in each block and power of an edge component of said luminance signal in each block obtained by an edge extracting filter.

26. (Previously Presented): The moving picture encoding apparatus of claim 1, wherein said block feature comprises a weighted sum of a variation in color signal in each

block and power of an edge component of said color signal in each block obtained by an edge extracting filter.